

# Space Alert!



Global Network Against Weapons and Nuclear Power in Space  
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Newsletter #40

## Elon Musk (Space X) has gone nuts

by Bruce K. Gagnon

Elon Musk, and his company Space X, has a plan to take control of Mars. They want to 'Terraform' the dusty red planet to make it green and livable like our Mother Earth.

The first time I can recall hearing about Terraforming Mars was years ago while on a speaking tour in Southern California. I picked up a copy of the LA Times and read an article about the Mars Society, which has dreams of moving our human civilization to this faraway planet. The article quoted Mars Society President Robert Zubrin (a Lockheed Martin executive), who called the Earth "a rotting, dying, stinking planet" and made a case for the transformation of Mars.

Imagine the cost. Why not instead spend money to heal our lush, beautiful, colorful home? What about the ethical considerations of humans deciding that another planet ought to be transformed for our 'use'? What about the legal implications as the UN's Outer Space Treaty forbids such egotistical domination plans?

I am immediately reminded of the TV *Star Trek* show 'Prime Directive'. The Prime Directive, also known as Starfleet General Order 1, the Non-Interference Directive, was the embodiment of one of Starfleet's most important ethical principles: noninterference



SpaceX is selling T-shirts emblazoned with the words "Occupy Mars" and "Nuke Mars."

with other cultures and civilizations.

In other words 'Do no harm'.

But Elon Musk wants to do big harm to Mars and whatever elemental life that might exist there.

In an article recently posted on *CounterPunch*, journalism professor Karl Grossman writes:

"Elon Musk, founder and CEO of Space X, has been touting the detonation of nuclear bombs on Mars to, he says, 'transform it into an Earth-like planet.'"

As *Business Insider* explains, Musk "has championed the idea of launching nuclear weapons just over Mars' poles since 2015. He believes it will help warm the planet and make it more hospitable for human life."

As *space.com* says: "The explosions would vaporize a fair chunk of Mars' ice caps, liberating enough water vapor and carbon dioxide—both potent greenhouse gases—to warm up the planet substantially, the idea goes."

It's been projected that it would take more than 10,000 nuclear bombs to carry out the Musk plan. The nuclear bomb explosions would also render Mars radioactive. The nuclear bombs would be carried to Mars on the fleet of 1,000 Starships that Musk wants to build—like the one that blew up recently.

The fundamental UN treaty relating to these questions is the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, or simply the "Outer Space Treaty." It was ratified in 1967, largely based on a set of legal principles

the general assembly accepted in 1962.

The treaty has several major points to it. Some of the key ones are:

- Space is free for all nations to explore, and sovereign claims cannot be made. Space activities must be for the benefit of all nations and humans. (So, nobody owns the moon or other planetary bodies.)

- Nuclear weapons and other weapons of mass destruction are not allowed in Earth orbit, on celestial bodies or in other outer-space locations. (In other words, peace is the only acceptable use of outer-space locations).

- Individual nations (states) are responsible for any damage their space objects cause. Individual nations are also responsible for all governmental and nongovernmental activities conducted by their citizens. These states must also "avoid harmful contamination" due to space activities.

Even NASA, which has been sending probes to Mars for many years, has stated that Terraforming Mars is not possible. (NASA is most interested in mining operations on the Red Planet.) Their web site states:

Science fiction writers have long featured terraforming, the process of creating an Earth-like or habitable environment on another planet, in their stories. Scientists themselves have proposed terraforming to enable the long-term colonization of Mars. A solution common to both groups is to release carbon dioxide gas trapped in the Martian surface to thicken the atmosphere and act as a blanket to warm the planet.

However, Mars does not retain enough carbon dioxide that could practically be put back into the atmosphere to warm Mars, according to a new NASA-sponsored study. Transforming the inhospitable Martian environment into a place astronauts could explore without life support is not possible without technology well beyond today's capabilities.

In the end, Musk's call to 'Occupy' and 'Nuke' Mars could easily be described as typical 'American exception-

(See Musk P #6.)



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# Challenge the global space control doctrine

by Bruce K. Gagnon

Let me first say happy New Year to all who read these words. 2020 was a terribly challenging time for most people around the globe. It is safe to say that we all wish for a better and safer 2021.

Here in the U.S. we've just witnessed the brutal transition of power from Trump to Biden. The ill-fated last minute Trump coup attempt, and heightened racial tensions during the past four years, signal difficult times ahead. Sadly with the current Wall Street and military industrial complex control of Congress it appears that real change in America will take extraordinarily determined organizing and much national healing.

We must honestly remember a few things about Joe Biden. He was a huge promoter of George W. Bush's illegal and immoral 2003 'shock and awe' attack and occupation of Iraq. The 1994 "tough on crime" law authored by Biden, and signed by President Bill Clinton, was one of the key contributors to mass incarceration. Biden has long wished to cut Social Security and other social spending in order to 'upgrade' the Pentagon's capability to wage endless war. And finally, Biden was in charge of the illegal U.S. orchestrated coup d'état in Ukraine in 2014 that installed a neo-Nazi regime.

Covid has changed our work this year in the Global Network. We were not able to hold our planned annual space conference in Canada last spring (which was going to be folded into a larger peace coalition conference). The same conference will be held this June 4-5 on Zoom with the GN fully participating. Then our Keep Space for Peace Week plans in October were impacted as most local groups were under lock down. Instead of the usual public events on the street, we organized a well-attended webinar on Zoom. <https://youtu.be/1Kh4-r6Jh20>

Thankfully board member, Will Griffin, (GN social media consultant) has been continuing to produce our monthly space videos which are getting excellent reviews. You can find them on YouTube at 'GNspace4peace'. Various board members are also writing more articles and participating in other space-related Zoom events.

This newsletter arrives as the U.S.-NATO demonization of Russia and China operation is set on full-speed ahead. The U.S. has continued to walk away from arms control treaties with the last big one (New Start Treaty) expected to run out in February 2021. Biden has said he wants to extend the current treaty for five-years (a change from Trump's position) but early indications are that Washington intends to impose unknown 'costs' linked to Democrats previous flimsy claims that Russia interfered in the 2016 election. (This might turn out to be a U.S. excuse to kill the treaty while transferring the blame to Russia.



Watch this closely with a critical eye.) The Russians have offered to sweeten the pot by saying their new hypersonic missiles are negotiable.

During this past year we've been witnessing a virtual explosion of plans to construct new 'spaceports' at various locations around the world. Proposals have included building them in Scotland, Hawaii, Maine, Japan and beyond. Some are still in the works and others have been put on the shelf for now. Space X and other corporate-owned launch companies are scanning the globe for launch sites as the 'need' for tens of thousands of mini-satellites for 5G are making the aerospace industry drool as they envision the money that can be made hoisting them into the heavens.

A couple big problems immediately come to mind when I think of thousands of mini-satellite launches. One would be the toxic rocket exhaust punching a hole in the Earth's ozone layer thus making our climate crisis worse. The growing space debris problem, with increasingly congested orbits adding to the mess, makes the chances of an accidental avalanche of crashes in space more likely. This could ultimately make it impossible to launch a rocket off Earth due to the 'minefield' of space junk circling our already fragile planet. Astronomers are upset about the dark night sky being fouled by legions of new blinking satellites encircling our planet.

As a result the Global Network moved in January, 2021 to join as a partner in the 'Petition for an Emergency Expedited Ruling in Federal Court' to ask the Federal Communications Commission (which regulates satellite communications) to investigate and rule against this massive number of mini-satellite launches because of their many impacts on our lives and on Mother Earth.

## How do we get out from behind this eight-ball?

As of this writing it seems that in Washington the best the Congress could recently do was to give each

American citizen \$600 to help them through what has become the worst economic crisis since the Great Depression. How politicians think families are going to survive that are behind in paying bills, out-of-work, without healthcare, and not able to feed their families is beyond me. At the same time the Congress made sure to protect the interests of the military industrial complex by handing them another record-breaking appropriation for 2021.

The corporate lockdown of the Congress is complete. Italy's WW II fascist leader Benito Mussolini defined fascism as the "the merging of the state and corporate power". Isn't that what we have today in the U.S. and much of the capitalist world?

I believe the first thing to do is to acknowledge our predicament and stop believing that the Democrats (or any other corporate controlled 'liberal' party) will rescue us. I re-

mind you that when Trump got the new 'Space Force' approved in Congress the only thing the Democrats demanded was to call it the 'Space Corp'.

This same story is being played out all over the 'NATO-led' world. Japan, South Korea, Italy, France, Germany, Australia, UK, Sweden, Brazil and others are clamping down on economic justice and civil liberties and their so-called 'liberal' opposition parties are sitting on their hands. Corporate globalization is consolidating power and pushing out opposition voices.

The preparation for war with Russia and China by a steroidal NATO needs to be vigorously denounced and protested as often as possible. Movements in NATO-member nations must oppose funding increases for the out-of-control military arm of corporate capital which aims to move into the Pacific as a global military alliance. The U.S. is pushing to have NATO trump (if I may use that word) the United Nations as the preeminent global assembly of nations. This must be rejected.

We must work hard to continually show the deadly connections between climate crisis, economic depression and the costs of endless war preparation. None of our movements will ultimately be successful unless and until we show these clear links and work together.

We must be more determined than ever to organize public resistance to this wedding of government and corporate power. We must use every possible lever available to us in our creative and determined resistance.

Best of luck to you.

—Bruce K. Gagnon has coordinated the Global Network since its founding in 1992. He lives in Bath, Maine.

# Esrange Launch Expansion in Sweden

by Agneta Norberg

“By the silence, you understand the importance,” said Professor Noam Chomsky. I have this in mind when I read the reports about the developments of space installations in the North of Sweden. Another quote by Bruce Gagnon comes in mind: “All civilian space programs can be used for military purposes.” Bruce Gagnon is the co-founder of Global Network Against Weapons and Nuclear Power in Space.

In 1982, a book was published in Norway: *The Bomb-target Norway*, by Jorgen Johansen. It was a frightening catalog about the numerous U.S. military installations along the Norwegian landmass. The book warned the Norwegian population that Norway would initially be targeted if a war broke out between the Soviet Union and the U.S. Most important was the information of the big radar installations in Norway, some close to the Russian border.

Today Sweden has joined the club [NATO]. Numerous bases are installed from the North to the South in the “neutral and non-aligned” country of Sweden. We have Lerkil in the South and Esrange in the North of Sweden—the world’s biggest downloading station from satellites.

South of Gothenburg and not far from the City of Kiruna, Esrange controls or monitors 24 satellites from this station. The Swedish Space Corporation, which runs the station, has made an alliance with the U.S. corporation Universal Space Net. It is called “The Piora Net.” Today Esrange works in close cooperation with NASA and was from the beginning presented as a civil project. It works closely with Vandenberg Air Force Base in California. Additionally, Esrange launches sound rockets and high-altitude balloons.

In October last autumn, the Swedish



government announced that Esrange will receive millions in fresh money to launch satellites. The first rocket with satellites onboard will be launched in 2022. This means an important expansion and the project “The New Esrange” will acquire at least 20 new employees. Esrange is already one of the most active launch sites in the world and the latest decision allows it to proceed with its goal to be able to launch small satellites or mini-satellites into the orbit by 2022.

Sweden’s new strategy, decided upon in 2018, will underline the importance of developing Esrange in order to “fully utilize” its potential. It will “strengthen Sweden’s position as a prominent space nation”.

Esrange is based inside NEAT, short for North European Aerospace Test range. NEAT is the largest overland test range in Western Europe. At NEAT tests of different aerospace vehicles are performed. Missile tests can be conducted by using a restricted ground space of 1650 km<sup>2</sup>. Similarly, sounding rockets and stratospheric balloon flights can be launched using launch pads, ground

facilities, and an available unpopulated land area covering 5,200 square kilometers. Remote controlled target drones and UAV and UCAV are tested at NEAT.

Sweden will be one of the very few countries in the world with the capability to launch small satellites. “We are proud to have taken this decision,” said Matilda Ernkrans, Swedish Space Minister, during her visit to Esrange.

What are mini-satellites good for? Eventually, I found one plausible answer: They can be used as an anti-sat-

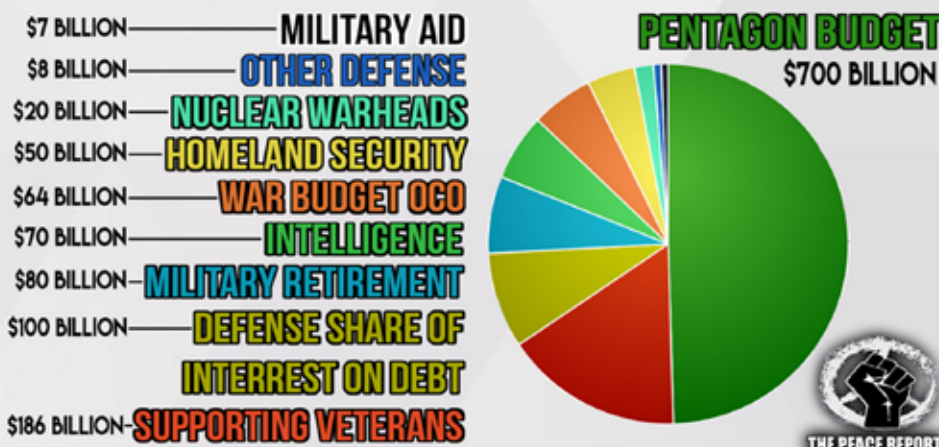
ellite weapon and destroy and damage military opponent’s satellites...which means China’s and Russia’s satellites. [They will also be used to intercept and share military information.]

Sweden has, with its vicinity to Russia, become a servile obedient vassal state to the U.S. What a shame!

—Agneta Norberg is a member of Women for Peace and serves on the Global Network board. She lives in Stockholm, Sweden



## THE TRILLION DOLLAR NATIONAL SECURITY BUDGET



**\$1,285,000,000,000 TRILLION EVERY YEAR**

# Global Ban on ‘Missile Defense’ Needed

by Subrata Ghoshroy

On November 16, 2020, the U.S. Missile Defense Agency (MDA) reported that it had conducted a successful intercept of an intercontinental ballistic missile (ICBM) off the coast of Hawaii. The downed missile was launched from Kwajalein Atoll in the Marshall Islands. The interceptor was a Standard Missile (SM)-3 Block IIA, which is made by Raytheon Corporation. It was launched from the USS *John Finn*, an Arleigh Burke-class destroyer, which is equipped with the Aegis Ballistic Missile Defense System (MD). The MDA said that it was a “developmental test” that satisfied a Congressional mandate to evaluate the feasibility of the SM-3 Block IIA missile’s capability to defeat an ICBM threat. The MDA said further that the SM-3 Block IIA was originally designed and built for the Intermediate-range Ballistic Missile threat set.

The U.S. has been saying for many years that the system it is currently developing is designed to counter a “rogue nation” threat. Countries like Iran and North Korea have capabilities to hit forward-deployed U.S. troops with intermediate-range missiles and possibly long-range missiles. However, they are not as sophisticated as Russia or even China. It basically means that these nations would not have the “sophistication” to deploy decoys with their “nuclear” payload. The U.S. does not yet have the capability to defeat decoys. Furthermore, a Russian attack would likely consist of a salvo launch with a large number of missiles at once. Hence, the present system is not a threat to Russia.

However, Russia does not agree with the U.S. assessment. It reacted swiftly to the U.S. announcement accusing the U.S. of lying about its true intentions for developing a global MD system. Russia believes that the real aim of the Pentagon is to gain a nuclear “first strike” capability by undermining Russian nuclear deterrence. Russia points to the U.S. deployment of SM-3 missiles in the Aegis Ashore systems in Poland and Romania, which are now part of NATO. The Russian fear is that the SM-3 missiles would be able to intercept Russian ICBMs bound for

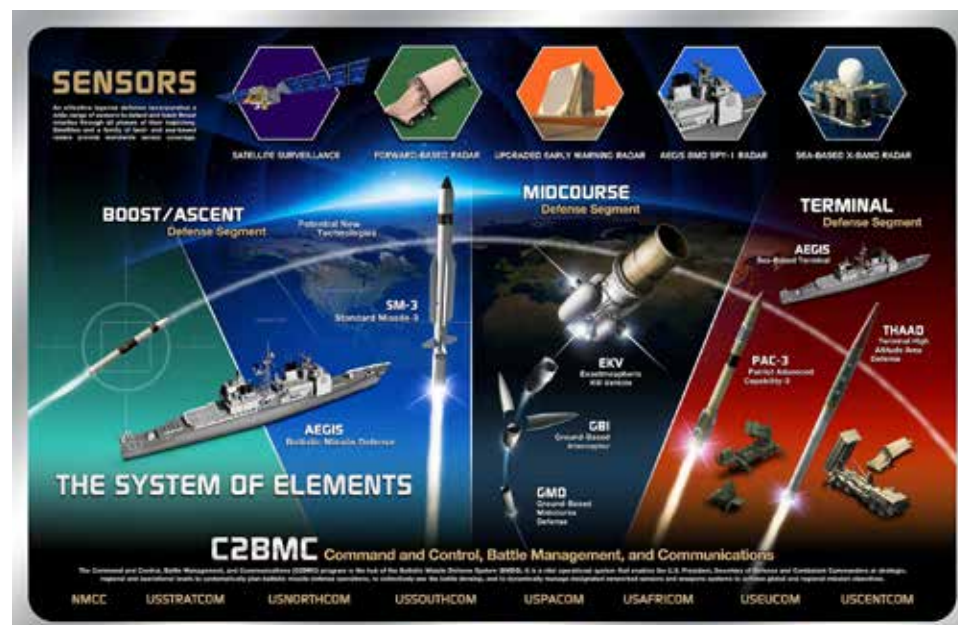
targets in the U.S. in retaliation after a U.S. first strike.

Although the intercept scenarios would likely be different since a Russian ICBM would have to be intercepted in the ascending phase. The time between detection and interception would be much shorter, given the proximity of the launch sites. There is also the uncertainty about the veracity of the claims made by the MDA because there is no independent verification of the test. It is common knowledge that the Pentagon repeatedly lied in the past about the success of MD tests. The author witnessed firsthand how the Pentagon called the first flight test of the MD program, in 1997, a “total success,” when it was the exact opposite.

Russian military planners cannot be expected to rest on their laurels because U.S. systems have not been proven. They have to also consider the possibility that the U.S. may be tempted to carry out a preemptive strike falsely believing their own rhetoric. As reported in a *Newsweek* article, the Russian Foreign Ministry spokesperson Maria Zakharova branded the test “a new confirmation of the dangerous and destabilizing character” of Washington’s anti-ballistic missile strategy and “its obvious anti-Russian orientation.”

Russians have repeatedly warned about the possibility of another nuclear arms race arising from the deployment of MD systems because defense gives rise to more offense. The landmark 1972 ABM treaty was the result of this fundamental realization by both sides. However, even after the unilateral U.S. withdrawal from the ABM treaty in 2002, Russia negotiated two arms control agreements with the U.S., which reduced the nuclear arsenals of both nations.

The earlier treaty, known simply as the Strategic Offensive Reduction Treaty, expired in 2012. It was superseded by the New START treaty, which was signed by Presidents Obama and Putin in 2010. It reduced the total number of warheads by each side to 1,550 and limited the total number of delivery vehicles, including silo-based ICBMs, submarine-launched ballistic missiles, and heavy bombers, to a maximum of 800 each. It is the last remaining



bilateral arms control agreement between U.S. and Russia. It is scheduled to expire on February 5, 2021.

The Trump administration has been reckless with its acceleration of the MD programs and withdrawal from the Intermediate Range Nuclear Forces (INF) treaty. It was also threatening to let the New START expire. The Biden administration will most likely extend the treaty by some period. President Putin has already agreed to a “warhead freeze” for a one-year extension.

There are many other compelling reasons for ending the MD program, as I have outlined in my recent article in the *Bulletin of the Atomic Scientists*. It is an extreme waste of taxpayer money, ineffective, and counterproductive. It is also potentially the most dangerous because it is destroying the strategic stability between the two nuclear superpowers. Consequently, it could produce an uncontrolled nuclear arms race, which will not be limited to U.S. and Russia alone but include China, India, and Pakistan, not to mention volatile countries in the Middle East.

Yet, there is bipartisan support for MD programs in Congress. For example, a March 26, 2010 White House Press Release announcing the signing of the New START treaty, declared that the treaty placed “**No Constraints on Missile Defense and Conventional Strike:** The Treaty does not contain any constraints on testing, development or deployment of current or planned U.S. missile defense programs

or current or planned U.S. long-range conventional strike capabilities.”

Arguably, there is no need for MD systems against short- or intermediate-range missiles. U.S. conventional superiority can easily overcome any such missile threats, and, as discussed above, missile defenses against ICBM threats are costly, ineffective, and extremely dangerous.

It is high time to end this bipartisan consensus. We should demand that the MD program be drastically cut back, if not canceled altogether. Instead, U.S. should take the lead in proposing a global ban on MD systems.

—Subrata Ghoshroy, a member of the GN’s Advisory Board, is a Research Affiliate with Program on Science, Technology, & Society at the Massachusetts Institute of Technology and a Visiting Professor at the Tokyo Institute of Technology. He is also the Co-Chair of the International Network of Engineers & Scientists (INES) for Global Responsibility.

## Planned Gift to GN

If you are in the process of estate planning, please consider making a gift of a tax-deductible donation in the form of a bequest, donation of stock, or other instruments to the Global Network. Your planned gift would be an important contribution to our movement to stop the militarization and nuclearization of space. Thank you for your consideration.

# MD Radar in Hawaii Back on Track

by Lynda Williams

In the last Space Alert #39, I reported that the proposed Homeland Defense Radar in Hawaii (HDR-H) had been zeroed out in the Pentagon's 2021 budget proposal, indicating the project was all but cancelled. According to Vice Adm. Jon Hill, the Missile Defense Agency's (MDA) director, the agency had decided to push the radar "to the right because of host issues that we have to come through. We still have that issue ... We moved it out." However, due to the lobbying efforts of the Congressional delegation from Hawaii led by Senators Mazie Hirono and Brian Schatz, the HDR-H was put back into the \$740 billion National Defense Authorization Act (NDAA) to the tune of \$133 million.

Sparky Rodrigues, a local activist with the group Mālama Mākua that opposes the HDR-H, said he felt blindsided when he learned the radar's funding had been restored. He accused Hawaii's congressional delegation of resurrecting a dead project to create job and contract opportunities for local construction companies at the cost of desecrating sacred native lands.

"We participated in the community meetings, submitted testimony and stopped the radar," he told local Hawaii newspaper, *Civil Beat*.

The MDA originally had proposed three sites on Oahu for the 8-story-tall-by-8-story-wide \$2 billion radar station that would take up approximately 160-acres of land, one on Kuaokala Ridge adjacent to the Air Force's Kaena Point Satellite Tracking Station, and two additional at the U.S. Army's Kahuku Training Area on Oahu's north shore. After discovering native temples or *heiau* sacred to native Hawaiians, the MDA eliminated the Kuaokala Ridge site in favor of sites at the Pacific Missile Range Test Facility (PMRF) on the island of Kauai. PMRF is the world's largest training missile range that houses both THAAD and Aegis Ashore MD interceptor test systems. The Pentagon is also considering plans for deploying Aegis Ashore as an operational interceptor site at PMRF, a very controversial proposal for locals.

If HDR-H is built in Kauai it is very likely that Aegis Ashore will become operational at PMRF, making Hawaii a greater target to US adversaries.

Hirono, a member of the Senate Armed Services Committee, claimed in a press release that "HDR-H is part of our country's critical, layered defense. As the US continues to confront a range of strategic threats in the Indo-Asia-Pacific region, it is imperative that all Americans are protected by our ballistic missile defense system."

However there is no scientific evidence that our ballistic missile defense system can protect anyone from nuclear weapons. The HDR-H, like its precursor, the long overdue Long Range Defense Radar (LRDR) in Alaska, is a midcourse tracking radar

## CANCEL THE HDR-H!



intended to identify nuclear ballistic missiles early in flight from North Korea, to be intercepted by 44 ground-based midcourse interceptors (GMD) based in California and Alaska. But after nearly twenty years and \$100 billion, the ageing GMD system has never been tested in real world scenarios with decoys.

According to Laura Grego, Senior Scientist with the Union of Concerned Scientists, "These radars are meant to try to help you discriminate from the real target and a confusing decoy. We've never tested the system in anything like those conditions. I'm pretty skeptical that they would even work well," she told *Hawaii News Now*.

MDA cancelled the HDR-H because it is outdated technology that will not be able to handle looming hypersonic missiles being developed by the US, China and Russia in a new hypersonic arms race. The MDA was moving the money from ground-based radar systems like the HDR-H to space based sensors that may better detect the unpredictable trajectories of hypersonic missiles. Hypersonic missiles travel at speeds greater than five times the speed of sound and are also able to fly at lower altitudes than ballistic missiles and can follow unpredictable trajectories.

According to a recent U.S. Government Accountability Office report on hypersonic missiles: "Unlike ballistic missiles, which can reach similar speeds but have a relatively fixed flight path, hypersonic weapons, once developed, would fly at lower altitudes, be highly maneuverable, and may be able to change targets during flight. This will make them extremely difficult to defend against."

In the meantime, the MDA is developing a "layered" approach to missile defense that relies on ex-

tending the range of Aegis SM3-Block 2 interceptor while awaiting a \$5 billion upgrade on GMD with Next Generation Interceptors (NGI), that will take 10 years to develop and deploy. The Aegis SM3-Block 2 interceptor was designed for short and intermediate range targets, not intercontinental-range ballistic missiles (ICBM). SM3 interceptors are cheaper than GMDs and can be deployed on Aegis navy destroyers and on land in an Aegis Ashore system. Arms control experts fear that the US deploying large numbers of Aegis interceptors will compromise new Strategic Arms Reduction Treaty (START) negotiations.

Archeological surveys and Environmental Impact Studies currently being developed for all proposed sites should be released in early 2021, more than a year behind schedule. The NDAA also requires the MDA to produce a report within 30 days regarding the Kauai site's viability and impact on PMRF training range operations, in early February, 2021.

In this time of grave economic uncertainty due to the COVID-19 pandemic, the government must redirect spending from the police and military to more urgent social needs such as health care, education, and the environment. We must pursue diplomatic strategies for resolving conflicts in the Pacific.

—Lynda Williams is a physicist and science entertainer who is devoted to nuclear disarmament and the proliferation of peace. Lynda lives and teaches in northern California.

Help support our work!  
Join Global Network.  
See page 16!

# Rocket Lab: New Zealand Dragged into US Militarization of Space

by Murray Horton

Rocket Lab (RL) was founded in 2006. Its founder and CEO is Peter Beck, a high-profile New Zealand (NZ) entrepreneur who was a finalist for New Zealander of the Year 2020. He personally and Rocket Lab, the company, have enjoyed consistently favourable treatment from both the NZ media and successive governments.

RL was originally touted as a shining example of Kiwi innovation and continues to be under the Jacinda Ardern government. But, in fact, it is now simply the NZ subsidiary of an American company, with major ownership by Lockheed Martin, the world's biggest weapons manufacturer.

RL's clients, whose payloads it launches into space from its Mahia Peninsula facility (on the east coast of NZ's North Island), include a whole range of U.S. military, intelligence, and surveillance agencies. Those payloads are satellites but new generation ones, much smaller than previous generations of satellites.

In 2010, RL worked on a project for the U.S. Defense Advanced Research Projects Agency (DARPA). The result of this work was demonstrated to U.S. military clients in 2012. In 2013, it got backing from a Silicon Valley billionaire venture capitalist Vinod Khosla. In 2014, another funding round saw Lockheed Martin invest in RL, along with Bessemer Ventures, and more money from Khosla.

In a 2018 NZ media interview, CEO Peter Beck said: "Look, we've been an American company and proud of it for many years. The New Zealand element is very important and very special to us, but we never tried to hide the fact we're a U.S. company."

RL is now incorporated in the U.S., and its rockets are made at its Huntington Beach, California factory, which is much larger than its recently opened assembly plant in Auckland (NZ's biggest city). And yet, most of RL's 200+ staff are in New Zealand, and half of its 180 hires in the year ahead will be in NZ—all high-value jobs. The company did just name its first launch site in the U.S. (NASA's Wallops Launch Facility in Virginia) and Beck says it's actively scouting for a site in the UK, with one in Asia to possibly follow.

Beck says that as RL chases a NZ \$3 billion pipeline of satellite launches over the next four years and ramps up to weekly flights, Mahia Peninsula will remain its highest frequency launch site. Our relatively liberal regulatory environment helps, Beck says, but it's mainly because our airways and shipping lanes are, by international standards, nearly empty.

RL's first rocket launch was in 2018 and there have

been plenty since, for a whole range of clients including DARPA, U.S. Air Force, U.S. Army Space & Missile Defense Command, U.S. Special Operations Command (a wing of the Department of Defense that undertakes covert missions around the world) and for the U.S. National Reconnaissance Office (NRO), the military agency in charge of spy satellites.

Tel, which he described in a 2013 NASA oral history as the venture capital fund of the Central Intelligence Agency (CIA). "I was running what was essentially a technical venture capital fund whose purpose was to make products and services available to the intelligence community."

Griffin appeared at a 2019 summit focussed on directed energy weapons—which include lasers, microwaves, and particle beams—hosted by U.S. consulting giant Booz Allen Hamilton. He was described in the *New York Times* as an "unabashed defender of American military and political supremacy and is also a proponent of hypersonic missiles."

**"We're about Science, We're Not about Killing People" Yeah, Right**

In a 2008 magazine profile Peter Beck ruled out military work when discussing if there were payloads RL wouldn't carry. "Of course ... we said right from the beginning if it's involved in the military, we don't want anything to do with it. The military can be quite a tempting cherry because a lot of money gets poured into it, but we're about science, we're not about killing people."

Beck had a very different reply from 2008 when asked if he had any qualms about sending U.S. spy satellites into space, given the intelligence they collect

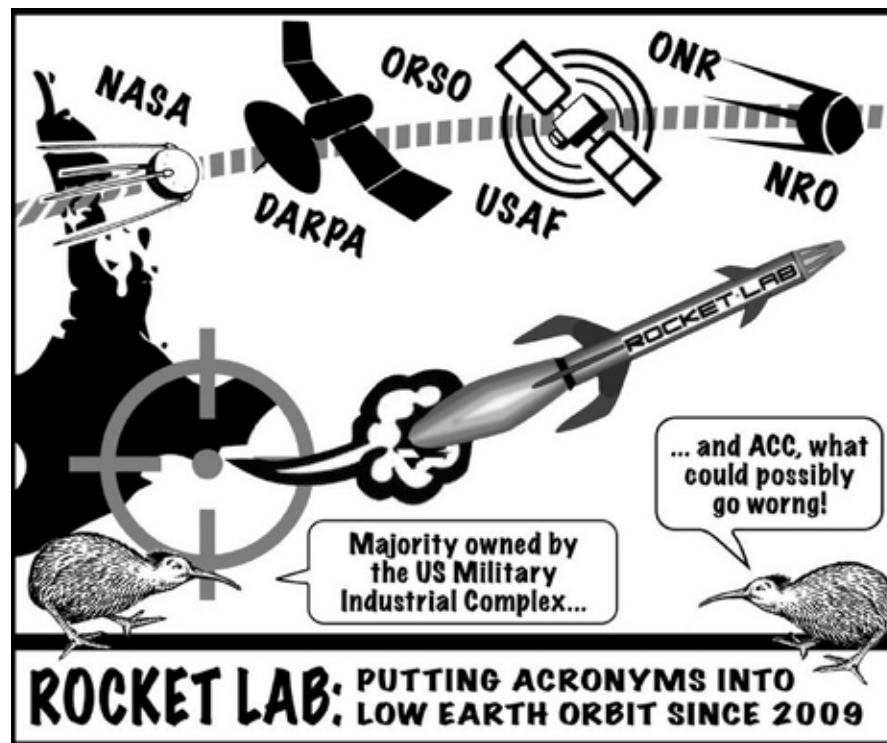
can be used in military operations. "You also have to remember that intelligence keeps us safe. Unfortunately, there's a lot of bad actors in the world. I am a New Zealander, but you also have to understand that national security is a global thing. It's not a singular country's responsibility. New Zealand is part of the Five Eyes... it's all very well to criticise national security until the very day that you need it".

—Murray Horton directs the Anti-Bases Campaign in Christchurch, New Zealand and publishes the journal called *Peace Researcher*

## Musk (cont. from P. 1.)

alism.' And supreme arrogance. His ambitions are mega-terrestrial, and he seems not to understand how dangerous his ideas (like launching 10,000 nukes to Mars) really are to those of us still trying to survive on Earth and to anyone who would be foolish enough to venture to Mars after such a mad scheme had taken place.

It is time for the adults in the room to sit the out-of-control and spoiled child down and inform him that he does not own the universe. No, Elon, you are not going to be the master of Mars.



## War Fighting Capabilities

RL is looking forward to getting ever further enmeshed in the U.S. military's war fighting capabilities in 2021. It will be launching a "Gunsmoke-J CubeSat technology demonstration mission" for the U.S. Army's Space & Missile Defense Command in the first quarter of the year. The U.S. company responsible for the actual deployment of the satellite from RL's rocket says it "will have a huge impact on milestone developments in war fighter capabilities on the battlefield and beyond".

Proof that RL is simply an American-owned contractor for the U.S. military/intelligence empire came in September 2020 with the revelation that: "RL's new Board member headed the CIA's venture capital firm and is a proponent of deploying high-powered laser weapons in space."

Michael Griffin, who was until recently an Under-Secretary of Defense in the Trump Administration, was welcomed onto the Board in August (2020). In the 1980s he held a senior role in then-President Ronald Reagan's Strategic Defense Initiative ballistic missile defence programme (*Star Wars*), and later headed NASA.

Griffin also once served as the President of In-Q-

## Nukes (cont. from Page 9)

think-tank has weighed up the future energy needs of a manned settlement on Mars and arrived at an interesting conclusion...solar arrays might function just as well, if not better, than the nuclear options.”

As for the Moon, Discover magazine published a piece, “How to Harvest Terawatts of Solar Power on the Moon,” noting how a Japanese corporation, Shimizu, is “gearing up to develop solar power on the moon.”

As for nuclear propulsion, its promoters are saying it would get astronauts to Mars quicker. Shouted the headline in Popular Mechanics in November: “The Thermal Nuclear Engine That Could Get Us to Mars in Just 3 Months.”

I’ve written many pieces about the solar alternative for propulsion in space: solar sails. There was a comprehensive article in New Scientist in October about this, “The new age of sail,” it was headlined. The subhead: “We are on the cusp of a new type of space travel that can take us to places no rocket could ever visit.” The article began by relating 17th Century astronomer Johanne Kepler observing comets and seeing “that their tails always pointed away from the sun, no matter which direction they were traveling. To Kepler, it meant only one thing: the comet tails were being blown from the sun.”

There are critical issues here on Earth: the COVID-19 pandemic, the climate crisis, and on and on, calling for and necessitating strong actions. If we also deem to explore space, it must be done safely and responsibly, without nuclear power and without a scheme to “Nuke Mars.”

—Karl Grossman was a co-founder of the Global Network in 1992. He is an award-winning investigative reporter and full professor of journalism at the State University of New York/College at Old Westbury. He lives on Long Island, New York.

# Russia’s Hypersonic Missile Tested

by Brian Berletic

Russian state media reported, in early-December, a successful test flight of its new hypersonic missile, the Zircon. Flying at Mach 8 (8 times the speed of sound or around 10,000 kph), the missile poses a new and credible threat to the air defense systems of potential aggressors.

Fired from vertical launch tubes on a Russian warship, the missile is capable of striking both targets at sea and on land. This most recent test took place over a range of 350 kilometers but claims the missile is capable of ranges of up to 1,000 kilometers have been reported.

This range would mean that missiles fired from the Mediterranean Sea, for example, could hit virtually any target amid the ongoing Syrian conflict, both within Syria but also in neighboring nations.

U.S. Navy Aegis missile interceptor systems require 8-10 seconds of reaction time to intercept incoming attacks. In those 8-10 seconds, the Russian Zircon missiles will already have traveled

20 kilometers, and the interceptor missiles do not fly fast enough to catch up.

This speed discrepancy means that should enough of these missiles make it into service with Russia’s naval forces and should the need arise to use them—large numbers can be used to overwhelm air defense systems even if they are tuned specifically to counter hypersonic weapons like the Zircon missile.

U.S.-based think-tank—RAND Corporation—detailed the threat proliferation poses to U.S. military aggression around the globe in a lengthy policy paper titled, ‘Hypersonic Missile Non-proliferation: Hindering the Spread of a New Class of Weapons.’

The paper notes that:

“...because of the difficulties of defending against hypersonic missiles, relatively small hypersonic forces can pose threats against major powers’ forward-projected forces, or even deterrent threats against the homelands of major powers.”

And this “threat” to the “forward-projected forces” of “major powers”—referring almost exclusively to the U.S. and its multiple, ongoing campaigns of

military aggression, occupation, and intervention around the globe—is what the U.S. fears the most.

For the U.S. itself—a nation surrounded by two vast oceans—the prospect of hypersonic missiles posing a threat to its actual territory is minimal. It is its illegally deployed military forces engaged in likewise illegal military aggression around the globe that are most at risk.

In many ways, Russia’s hypersonic missile—the Zircon—is not just a technological achievement or a newly acquired and formidable military capability—it is also a useful component of a much wider diplomatic effort to shift the world from the Western-dominated unipolar “rules-based international order”—one underwritten by Western military aggression—and toward multipolarism where the cost of conflict is higher than the cost of fair competition and cooperation.

—Brian Berletic is a Bangkok-based geopolitical researcher and writer, especially for the online magazine New Eastern Outlook



Keep Space for Peace Week: Art Laffin (Dorothy Day Catholic Worker) holds a sign during Keep Space for Peace Week last October at the well-decorated White House fence in Washington. Very few events were held during space week due to virus pandemic.

## Letter to the Editor

This [Elon Musk plan to nuke Mars] reminds me of one of the scariest author radio interviews I’ve ever heard.

A journalist was talking about the inevitability of a human colony on Mars, mocking the backward “Earth Firsters.” The vision was a techno-paradise or nightmare, depending on your perspective. Too much radiation to be outdoors very much, so underground bunkers would be the norm. Can’t breathe the air as it is, so custom oxygen-mix tanks would be standard issue. Can’t grow food, so hydroponics and especially GE seeds. Hard for the human body to adapt in general to the atmosphere, so human bio-genetic engineering would be employed to make the bodies more resilient on Mars.

It is as crazy as Trumpism, with just as much money to be divorced from reality. The arrogance of abandoning this paradise as a throw-away planet alone is insane. But then I am a quaint Earth Firster, as are most humans experiencing gravity, breathing, eating food.

Thanks for all you do.

—Ruby Phillips, Seattle (Duwamish/Coast Salish territories)

# UK Spaceports: Supporting the militarization of space

by Dr. Dave Webb

Last November, Prime Minister Boris Johnson announced an extra £16.5 billion for UK defence, creating the biggest increase in military spending since the start of the Cold War. It was music to the ears of aerospace corporations as billions more were allocated to technologies that would “revolutionise warfare”. Plans included the establishment of a new agency dedicated to artificial intelligence (AI), a National Cyber Force and a UK Space Command to “work alongside MOD’s recently formed Space Directorate”. The Space Command was said to be needed because the space domain is “critical” to the UK remaining a “leading 21st Century power”.

In 2019 the Ministry of Defence (MoD) announced a £30 million military space programme supported by a team working closely with the US, to launch a small satellite demonstrator which would beam high-resolution video directly into the cockpit of fighter jets. Miniature satellites are relatively cheap to produce, launch and place in Low Earth Orbit and are being increasingly deployed for commercial and military purposes, government grants totalling nearly £40 million have been awarded to enable the launch of small

satellites from UK spaceports and the government has paid Lockheed Martin £23.5 million to identify suitable UK spaceport locations. Scotland is well positioned geographically for the launch of satellites into orbits suitable for communications and earth-observations and rockets are expected to be launched from their by 2022. The Edinburgh based Skyrora Ltd carried out the first successful test launch of its Skylark nano-rocket from the Scottish Highlands in June 2018 and is keen to become the go-to UK launch company.

The UK is also focussing on the production of miniature satellites through *Surrey Satellite Technology Limited* (SSTL). Elon Musk’s *SpaceX* company bought a 10% share in SSTL in 2005 and the European Aeronautic Defence and Space Company (EADS—now Airbus) acquired another 80% in 2008. SSTL has since captured 40% of the global small satellite market and received over £4 million from the MoD to develop a small, low-orbit satellite called Carbonite 2, which was launched in 2018 to provide high-resolution reconnaissance.

Space is now big business and seen by the government as one potential path to recovery from the economic havoc caused by Covid-19. Forecasts suggest it could be worth over \$1 trillion by 2040 and the UK aims to capture 10% of the market by 2030. A consortium of Local Enterprise Partnerships (LEPs) which bring together local authorities, academic institutions, research groups and businesses are establishing several regional space hubs around the UK to ensure that space is a priority for regional economic growth. Among them is ‘AstroAgency’ which operates across Scotland on behalf of the Scottish Space Leadership Council.

Lockheed Martin has chosen Unst—one of the Shetland Islands—to develop its own Shetland Space Centre (SSC) for vertical launch operations. Situated at a high latitude (61 degrees north), Unst is well placed for launching satellites into polar orbits—often used for reconnaissance, weather, or communications satellites. There are plans for other spaceports in Scotland—on the A’Mhoine Peninsula in Sutherland County in the Highlands and on an island in the Outer Hebrides, along with two others from which to conduct plane-based horizontal launches—at Prestwick and Argyll. All of these spaceports have joined together under the Scottish Space Leadership Council to form the Spaceports Alliance and others planned for Cornwall and Wales look likely to

become members in the near future.

The Scottish spaceports are promoted by Highlands and Islands Enterprise (HIE) and the UK Space Agency (UKSA) and welcomed by the Scottish Minister for Trade, Investment and Innovation. There has been opposition from environmental groups and local residents but planning permission has been granted nonetheless. The spaceport in Sutherland is backed by HIE, UKSA and the British Aerospace Company Orbex (who have already secured contracts for six launches of a ‘Prime’ launch vehicle for the site). The Highland Council received 457 objections to HIE’s planning application and Danish billionaires Anders and Anne Holch Povlsen, who own land near the spaceport, were among those who expressed concerns about its impact on vulnerable protected areas. Their company ‘Wildland Ltd’ is seeking a judicial review of the planning approval. Povlsen (who owns the £4.5bn ‘Bestseller’ clothing empire), and his wife have purchased around 220,000 acres of Scottish countryside they seem to want to protect, but they have also invested almost £1.5m in Lockheed Martin’s SSC on Unst—an apparent contradiction that demonstrates a common tendency of the rich—to protect their own backyard while happily making money from the destruction of other people’s.

Space activities are usually presented to the public as having significant commercial value and the promise of new jobs, but the military dark side is always present. Space operations are often useful to both commercial and military sectors and UKspace, the trade association of the British space industry, works closely with the RAF through the Commercial Integration Cell (CIC) at the MoD’s Space Operations Centre (SpOC) in High Wycombe. A similar set up in the US sees the Space Force and the Combined Space Operations Centre at Vandenberg Air Force Base working to improve interoperability between member nations of Operation Olympic Defender (OOD). OOD was established to build international partnerships to ‘deter adversaries and hostile acts in space’ and the UK was the first to join in 2019. The UK is also the first to gain access to the US Standardized Astrodynamics Algorithm Library (SAAL) which contains information to help predict the locations and trajectories of satellites and objects in orbit. Access to SAAL enables the streamlining of multinational military operations across the globe and will also increase the ability of the SpOC to collaborate and share data with the US Space Force.

So, the UK is now well on the way to being directly involved in US plans for space domination.

—Dr. Dave Webb is the Convener of the Global Network’s two governing boards and also the Chair of the UK’s Campaign for Nuclear Disarmament. He lives in Leeds, England.





# Nukes in space: What will Biden do?

by Karl Grossman

The use of nuclear in space is being pushed harder than ever.

“US Eyes Building Nuclear Power Plants for Moon and Mars,” declared the headline in July of an Associated Press dispatch. “

The White House National Space Council, also in July, issued a strategy for space exploration that includes “nuclear propulsion methods.”

A “Presidential Memoranda” was released by The White House in December titled “Strategy for Space Nuclear Power” elaborating on the U.S. desire for nuclear power and nuclear propulsion in space.

And, Elon Musk, founder and CEO of Space X, has been touting the detonation of nuclear bombs on Mars to transform it into an “Earth-like planet.” SpaceX is selling T-shirts emblazoned with the words “Nuke Mars.”

As *Business Insider* explains, Musk “believes it will help warm the planet and make it more hospitable for human life.” Space.com says: “The explosions would vaporize a fair chunk of Mars’ ice caps, liberating enough water vapor and carbon dioxide...to warm up the planet substantially, the idea goes.”

It has been projected that it would take more than 10,000 nuclear bombs to carry out the Musk plan. The nuclear bomb explosions would render Mars radioactive. The nuclear weapons would be carried to Mars on the fleet of 1,000 Starships that Musk wants to build—like the one that blew up in a fireball in December.

“Fortunately,” reported Lester Holt on the *NBC Nightly News*, “no one was aboard.” But what if nuclear materials had been aboard? What if one or more of those hydrogen bombs were aboard? What if a nuclear reactor which was supposed to be delivered to the Moon or Mars was aboard?

The nuclear space issue is one I got into 36 years ago when I learned—from reading a U.S. Department of Energy newsletter—about two space shuttles, one the Challenger, which were to be launched the following year with plutonium aboard. The plutonium the shuttles were to carry aloft in 1986 was to be used as fuel in radioisotope thermoelectric generators—RTGs—to provide a small amount of electricity to power instruments on the space probes. They were to be released from the shuttles once they achieved orbit. I used the U.S. Freedom of Information Act to ask what would be the consequences of an accident on launch, in the lower or upper atmosphere—and what about the dispersal of deadly plutonium. For 10 months there was a stonewall of challenges to my FOIA request by DOE and NASA. Finally, I got the information, heavily redacted, with the claim that the likelihood of a shuttle accident releasing plutonium was “small.” Then, on January 28, 1986 the Challenger blew up.

The Nation magazine asked me to write an edito-



Global Network members protesting (blind policies) outside the European Space Operation Centre (ESOC) in Darmstadt, Germany in 2007 during our annual space organizing conference.

rial titled “The Lethal Shuttle.” On its next mission, in May, Challenger was to have the plutonium aboard.

I got deeper and deeper into the nukes-in-space issue—authoring two books, one *The Wrong Stuff*, writing many hundreds of newspaper and magazine articles, doing three TV documentaries, speaking widely on the issue and helping to organize the Global Network Against Weapons & Nuclear Power in Space.

I learned quickly about the connection between NASA’s use of nuclear power in space and the weaponization of space. The Reagan “Star Wars” scheme of the 1980s was predicated on orbiting battle platforms with nuclear reactors or “super” plutonium systems on them providing the power for hypervelocity guns, particle beams and laser weapons. As declared James Abramson, head of “Star Wars,” formally called the Strategic Defense Initiative, “without reactors in orbit [there is] going to be a long, long light [extension] cord that goes down to the surface of the Earth” to power space weapons.

Will the new U.S. Space Force return to nuclear-powered space weapons systems?

Trump’s December “Presidential Memoranda”—“Strategy for Space Nuclear Power”—has a section on “National Security Guidelines.” It asserts: “The United States seeks a secure, stable, and accessible space domain, which has become a warfighting domain....It is imperative that the United States adopt...policies, strategies, doctrines and capability to...if necessary defeat aggression and protect U.S. interests in space...The United States Space Force will pursue these objectives as the primary branch of the United States Armed Forces responsible for organizing, train-

ing and equipping forces capable of projecting power in, from, and to space.”

With Trump out will there be change in the U.S. government’s push for nukes-in-space? We don’t know yet. The cover of a recent edition of the trade publication *Space News* was headlined: “JOE BIDEN’S TURN, WHAT’S IN STORE FOR NASA & SPACE FORCE?”

The answer remains to be seen. Biden is an advocate of “advanced” nuclear power. A large segment of fellow Democrats in the House and Senate voted in 2019 for formation of a U.S. Space Force.

The *Space News* article quoted a statement from a “Washington aerospace and defense consulting firm Velos” that “Biden has expressed no plans for structural changes to U.S. space programs...The Democratic Party national platform supports continuity within NASA and the Space Force...The outlook suggests Biden will not undo” the establishment of a U.S. Space Force.

Importantly, the same pressure from weapons manufacturers and the nuclear industry that has been applied in previous U.S. administrations will be applied to Biden’s.

Thus, critical to change U.S. policy is grassroots action. The Global Network Against Weapons & Nuclear Power in Space is now more important than ever!

As for power on would-be settlements on Mars and the Moon, said the headline in *Universe Today* in December, “Solar Power is Best for Mars Colonies.” The extensive article states how “a NASA-sponsored MIT

(See Nukes P 7.)

## Odds & Ends

### Raytheon man at DOD

Glenn Greenwald writes Joe Biden's pick to be the next Secretary of Defense is recently retired Gen. Lloyd J. Austin, III. The choice of Gen. Austin further erodes the once-sacred American norm that military officials will be barred from exercising control over the Pentagon until substantial time has passed after leaving active-duty military service. Biden's choice to lead the Pentagon recently resigned as a member of the Board of Directors of Raytheon Technologies, the world's third-largest military contractor. That means that upon Austin's confirmation, Raytheon will have a very good friend in charge of the bloated \$750 billion annual Pentagon budget.

### War \$\$\$ Blues

The Pentagon's once limitless ability to raid the national treasure chest for its endless appetite for more wars and weapons is hitting the wall—especially during the virus pandemic. As working class and poor people are set adrift by Washington and Wall Street the cries for bailout for the people are growing like a massive chorus line. Evidence of current Pentagon budget problems center around a decision to unveil a 30-year shipbuilding blueprint calling for one less aircraft carrier but dozens more warships than previous fleet plans — a course critics say is unaffordable and would lead to massive cuts to the Air Force and Army. Plans call for a framework that prioritizes not only shipbuilding, but also “tactical aircraft modernization, hypersonics, missile defense, and space capabilities.” The problem is that the U.S. treasury, already in massive debt, just can't afford it all anymore. Unless, of course, they just keep printing \$\$\$\$ or completely get rid of Social Security, Medicare and what other little ‘social safety net’ is left.

### Enemies needed

Jonathan Cook writes: “There is a reason that, as we rush lemming-like towards the cliff-edge, urged on by a capitalism that cannot operate at the level of sustainability or even of sanity, the push towards intensified war grows. Wars are the lifeblood of the corporate empire headquartered in the U.S.. Whether public or covert, wars provide an opportunity to remake poorly defended, resistant societies—such as Iraq, Libya, Yemen and Syria—in ways that allow for resources to be seized, markets to be expanded and the reach of the corporate elite to be extended. War is the ultimate growth industry, limited only by our ability to be persuaded of new enemies and new threats.”

### Space Force troops to be called ‘guardians’

Service members in the year-old Space Force will be called ‘guardians,’ the White House announced in late 2020. Former V-P Pence stated, “On behalf of your commander in chief, let me urge each and every one of you guardians to keep pushing, keep pushing, keep pushing the vision and the mission of the U.S. Space Force, which is to ensure that America remains as dominant in space ... as we are on land and sea and air.”

### Musk's \$\$\$ machines

In 2020 Elon Musk's company launched more than 16 batches of mini-satellites toward his goal of flooding Earth orbit with tens of thousands of satellites that would beam 5G and Wi-Fi signals to ground stations around Earth. SpaceX plans to accelerate its satellite launches to an average of 120 per month, marking SpaceX's transformation from a rocket company to an Internet service provider after being awarded \$886 million from the Federal Communications Commission (FCC) for the endeavor. To provide service, SpaceX states that it requires an infrastructure of one million on-the-ground antennas to connect its satellites with the ground users. In March 2020, the FCC approved SpaceX's ground antenna application. On 7/31/2020, SpaceX modified its original filing and has asked the FCC to increase this number to five million. These low-orbit satellites not only already contaminate our night skies and interfere with astronomy but also promise to flood Earth with powerful, focused electromagnetic beams that emit radiofrequency (RF) and microwave radiation proven to adversely affect the health of humans, animals and plants.

### A mini-sat ‘gold rush’

SpaceX may be the dominant player, but it is far from the only U.S. company with plans to slather “every inch of the world” with emissions from low-orbit 5G satellites. Amazon, angling for a potential four billion new customers, plans to launch a total of 3,236 satellites and promises to start delivering Internet services. Facebook is also planning for thousands of satellites. Finally, the Google subsidiary Loon has begun targeting “unserved and underserved communities” in Latin America for service provided by its network of stratospheric balloons traveling on “the edge of space.” One of the major non-U.S. players taking part in the “satellite Internet gold rush” is the UK-based company OneWeb, which launched an initial batch of six 5G satellites in 2019, followed by another 34 satellites in 2020. OneWeb announced its intention to keep up launches of 30 to 36 satellites every

month, with “full commercial global services” by 2021, well before OneWeb's eventual total of 5,260 satellites. However, a 2020 Bloomberg report stated that OneWeb may file for bankruptcy “as it grapples with high costs and stiff competition.” In Canada, officials from Telesat affirm that their low-Earth-orbit satellite deployments “could ultimately scale to 512 spacecraft.” China and Russia likewise have plans for multiple launches.

### U.S. bases drones in Romania

*Stars & Stripes* reports: The Air Force has moved 90 airmen and an unspecified number of MQ-9 Reaper drones to Campia Turzii Air Base in Romania, boosting military capabilities near the Russian border. The units are subordinate to the 31st Fighter Wing at Aviano Air Base in Italy. The Reapers will boost surveillance and reconnaissance capabilities in the Black Sea region. Last year, USAF sent MQ-9 Reaper drones based in Poland on a temporary rotation to the Turzii site. Air Force fighter jets also have made rotations to Campia Turzii. The Pentagon has spent millions of dollars in recent years to upgrade the Cold War-era base in central Romania. The Pentagon budget for 2021 includes \$130.5 million to renovate Campia Turzii, in what would be Washington's biggest overseas military construction project under the European Deterrence Initiative.

### NASA fears congested orbits

*ARS Technica* reports: NASA has formally commented on a request by a U.S. company to build a mega-constellation of satellites at an altitude of 720km above the Earth's surface, citing concerns about collisions. This appears to be the first time that NASA has publicly commented on such an application for market access before the Federal Communications Commission. “NASA submits this letter during the public comment period for the purpose of providing a better understanding of NASA's concerns with respect to its assets on-orbit, to further mitigate the risks of collisions for the mutual benefit of all involved,” wrote Samantha Fonder, an engineer for the space agency. At issue are plans put forth by AST & Science, which intends to build a constellation of more than 240 large satellites, essentially deploying “cell towers” in space to provide 4G and possibly 5G broadband connection directly to cell phones on Earth. The company, based in Midland, Texas, calls its constellation “SpaceMobile” and has raised an estimated \$120 million.

### More weapons industry consolidation

The Biden administration's approval—or disapproval—of Lockheed Martin's planned \$4.4 billion acquisition of rocket engine maker Aerojet Rocketdyne could shape defense industry consolidation

for years to come. If approved, the deal would mean the absorption of the last independent American weapons-grade rocket maker. All U.S. rockets would be produced by Northrop, which bought Orbital ATK in 2018, and Lockheed, the world's largest defense contractor. It would also turn Lockheed into a key supplier of Raytheon Technologies, its major rival in the missiles sector.

### Kerry to lead battle for Arctic

John Kerry has been nominated to be the Special Presidential Envoy for Climate by Joe Biden. Kerry's role as Presidential Envoy will elevate climate change to the ‘national security threat’ that the American military and intelligence community have identified it as. Kerry claims three urgent issues that the National Security Council (NSC) should take up immediately after the new Biden Administration begins are: (1) navy base resilience due to rising sea-levels, (2) reorienting foreign aid and military assistance to support climate security, and (3) preparing for the security challenge of a melting Arctic. Kerry urges that the NSC coordinate a diplomatic offensive with Arctic nations to discuss the security implications of climate change in the region to show that the U.S. ‘means business’ in the Arctic. In partnership, the U.S. military should actively participate in Arctic joint exercises, and publicize U.S. military deployments to the region, with particular focus on the Russian border—perhaps by returning the U.S. Marine deployment to Norway.

### New Mexico space port

*Albuquerque Journal* reports: Virgin Galactic is the anchor tenant for Spaceport America, a facility built for commercial space flight and other aerospace operations in southern New Mexico, approximately 50 miles north of Las Cruces. The company's most recent target date for flying its first commercial passengers on suborbital flights, at a current ticket price of about \$250,000, is in the first quarter of 2021. NASA announced it had awarded Virgin Galactic a flight services contract, bringing it on board, along with five other providers, to fly technologies for NASA's Flight Opportunities program. On its website, the federal space agency says the program “facilitates rapid demonstration of promising technologies for space exploration, discovery, and the expansion of space commerce through suborbital testing with industry flight providers.”

### China to the Moon

In early December China launched a spacecraft to collect and return samples from the Moon, the country's first attempt to retrieve samples from an extra-terrestrial body. A rocket, carrying the

## Odds & Ends

Chang'e-5 spacecraft, blasted off from the Wenchang Spacecraft Launch Site on the coast of the southern island province of Hainan. Chang'e-5 is one of the most complicated and challenging missions in China's aerospace history, as well as the world's first Moon-sample mission for more than 40 years.

### **U.S. aggresses Russian coastlines**

'America is back' hailed Joe Biden on Twitter in November. The world tried to figure out exactly what that meant. Biden's announcement curiously coincided with another incident on the very same day—the appearance of U.S. naval destroyer USS *John S. McCain* (built in Bath, Maine) within Russian waters off the coast of Vladivostok. The move seems to be a display of sheer bravado on the part of the Americans, who released a statement later on asserting that they had the right to challenge 'Russia's excessive maritime claims'. Moscow responded by saying the ship had been 'warned of the unacceptability of its actions' and (in short) it was lucky it had not been rammed by the Udaloy-class destroyer which had been tailing it. This provocative move was followed on the next day by U.S. missiles being launched into the Black Sea from Romania. The rocket-launch tests reportedly involved more than 130 troops and 30 pieces of military hardware. It doesn't take much imagination to work out what they could be used for: the range of these missiles is 300km, they could reach Crimea.

### **Space Force already wants more \$\$**

The Pentagon's newest branch, the U.S. Space Force (USSF), has taken over the Pentagon's space-based assets and has big plans for expanding its surveillance and offensive capabilities both on the ground and in space. Lt. Gen. John Thompson, commander of the USSF's Space and Missile Systems Center, stated at a recent forum that the service would continue to seek larger budgets in the coming years, confident that lawmakers and Pentagon planners will support a rapid expansion of space capabilities.

### **First overseas Space Force base**

The sixth and newest branch of the U.S. Armed Forces now has an overseas base. A squadron of 20 soldiers has been sent to an air base in Al Udeid, which is in a desert in Qatar, where the first unit abroad of the Space Force will be deployed. The number of troops in the region is provisional and is expected to increase. The missions to be carried out will revolve around monitoring the Persian Gulf and nearby nations using space technology. Washington chose to install a base in the Gulf region at a time of tensions between the U.S. and Iran, which have been progressively rising.

### **Tromsø says no nuke subs**

The Tromsø municipal council in northern Norway has decided to say NO to a port for U.S. nuclear-powered submarines. This prompted the Norwegian Minister of Defense to react: "Tromsø cannot opt out of NATO", he said in October. The federal government is pushing hard to override local politicians and public opinion. Tromsø is the third largest urban municipality in Norway, and the seventh in population. Tromsø is the regional civil administration center for the northern area in Norway. Tromsø is very close to the Russian border along the Barents Sea.

### **India to launch from Alaska**

India's private space industry is getting government support as privatization of space activities in the country was opened up for the first time. A Chennai-based Aerospace startup Agnikul Cosmos, which markets itself as specialists in rocket technology, has inked a key partnership with the Alaska Aerospace Corporation to test-launch the 'Agnibaan' rocket. The agreement will allow the Indian rocket-maker to test-launch its 'Agnibaan' rocket from Alaska Aerospace's Pacific Spaceport Complex on Kodiak Island. The first such test is expected to be launched in 2022. Local Kodiak residents are not at all happy about this expanding international role for the spaceport that was forced upon them years ago. Most recently, Astra Space (receives funding from NASA, DARPA, Air Force) attempted its third rocket launch from Kodiak Island and the rocket fell back down after launch and exploded on 'public land' where the launch complex is located. The state of Alaska funded the Alaska Aerospace Corporation and the Kodiak launch site until several years ago when the state could not afford to do so any longer. Besides the state funding the Alaska Aerospace Corporation has been receiving U.S. Government funding since the beginning and receives \$5-6 million a year for the sustainment of the Kodiak Spaceport Complex. The Navy is currently in the process of doing an Environmental Assessment for its Hypersonics missile tests from Kodiak. Local residents will be kept in the dark until the last minute about the testing that will take place by the military and others.

### **Africa space**

Africa's space programs account for a very small part of the world's space activity. But the continent's profile in space is growing. Since 1999, 11 African countries (Algeria, Angola, Egypt, Ethiopia, Ghana, Kenya, Morocco, Nigeria, Rwanda, South Africa, and Sudan) have successfully launched 38 unilateral and three multilateral satellites into orbit. 'Space in Africa' estimates that by 2024, at least 19 African countries will have

launched at least one satellite, with the total number of satellites launched by African countries rising to over 90. In 2017, the African Union passed legislation to establish the African Space Agency and recently approved Egypt as host country for the new agency's headquarters.

### **NATO space center at Ramstein**

NATO is expanding its military alliance into space, and announced construction of a "space center" at Ramstein AFB, Germany. The new facility will be used as a coordination point for surveillance in space, the German newspaper *Süddeutsche Zeitung* reported. "This will be a focal point for ensuring space support to NATO operations, sharing information and coordinating our activities," a NATO official said. About half of the 2,000 satellites currently in earth orbit are owned by NATO members. The action follows a 2019 NATO decision declaring space as a separate area of operations.

### **INL & space nukes**

The U.S. wants to build nuclear power plants that will work on the Moon and Mars, and has put out a request for ideas from the private sector on how to do that. The U.S. Department of Energy put out the formal request to build what it calls a fission surface power system that could allow humans to live for long periods in harsh space environments. The Idaho National Laboratory (INL), a nuclear research facility in eastern Idaho, the Energy Department and NASA will evaluate the ideas for developing the reactor.

### **Disarmament Instead of Rearmament**

With more than 100 events and several thousand participants, the day of action and protest organized by the German *Abrüsten statt Aufrüsten* campaign (Disarm instead of Rearm) in December was a great success, despite the difficult conditions created by Covid-19. Peace initiatives all over the country were joined by trade unions and—in a new showing of solidarity— environmental organizations who took to the streets for peace and disarmament. In a speech in Berlin, the Chair of the German Trade Union Confederation (DGB) Reiner Hoffmann stated, "...we have ample reason to demand a change of course. The NATO goal that all allies should spend two per cent of their GDP on rearmament is still not off the table. For Germany, this would mean that its defence budget would increase to around 80 billion euros...What nonsense! Much more urgent is the question of how we can talk to each other after the return of the U.S. to the Paris climate agreement.

Talking about how the new U.S. administration and the Europeans can cooperate more closely in the fight against climate change. Arms build-up and the force of arms do not solve problems."

### **Forthcoming report of interest**

A report in the making for several years is finally nearing completion and is expected to be released this Spring, says GN Advisory Board member Subrata Ghoshroy, who has led an international group of scientists, former government officials, academics, and diplomats in this effort. The report was commissioned by the Abolition 2000, which provided a small amount of seed funding to initiate the work. The report is entitled *Deployment of Missile Defense Systems and Weapons in Space: Serious consequences for global peace and security. A Report of the International Working Group Moving Beyond Missile Defense and Space Weapons (MBMDS)*. The report's contributors include GN Convener Dave Webb, INES Co-Chair Juergen Scheffran, INES-Treasurer Claus Montonen, and Vladimir Kozin, among others. Among its recommendations are beginning of an urgent consideration of the PAROS draft treaty and demanding a global ban on missile defense systems. The report will be published online with a printed Executive Summary that will be distributed by the International Network of Engineers and Scientists (INES) for Global Responsibility, Berlin, Germany.

### **Musk company working for Space Force**

The Space Development Agency (now integrated with the Space Force) selected Elon Musk's company SpaceX as the launch provider for its first 28 satellites, awarding the company a \$150 million contract for two launches. SpaceX is expected to conduct the first launch in September 2022. All satellites need to be on orbit by March 31, 2023. The satellites will form the layers of the SDA's National Defense Space Architecture, a constellation in low Earth orbit that will be able to 'push targeting data to war fighters, track hypersonic weapons, connect sensors and shooters over the orbit network'. While the NDSA will eventually include hundreds of satellites, the agency isn't putting them all up at once—the agency plans to add a growing number of satellites every two years.

### **National Satellite Center in Jeju, South Korea**

In Jeju, the area for the building of the 'National Satellite Integrated Operation Center' is secretly under consideration. According to a local media, 'Jeju Today', it was last November that the plan was (See *Odds & Ends* P 12.)

## GOODBYE MOON

# Fly me to the Moon, but don't put reactors there

by Linda Pentz Gunter

Not content to desecrate our terrestrial landscape with hundreds of thousands of tons of nuclear waste—much piled up with nowhere to go, the rest released to contaminate our air, water, and soil—humankind now plans to do the same to the Moon. And eventually to Mars.

While our species' insatiable scientific curiosity has undoubtedly led to some beneficial inventions, it has also drawn us inexorably towards our own downfall. Our zeal to create the atomic bomb ignored logic, ethics, consequences, and the fundamentals of human rights.

The bomb brought us so-called civil nuclear power reactors, the ugly and irresponsible spawn of a weapon that leaves us perched perpetually on the precipice of extinction. But there is nothing "civil" about nuclear power.

At the dawn of the nuclear energy age, not a thought was given to the legacy of deadly radioactive waste it would produce. That can was kicked down the road. Now we are far down that road and no solution in sight, while we ignore the one obvious one: stop making more of it!

Now comes the news that the U.S. wants to put nuclear power reactors on the Moon.

In the news stories that followed the announcement, replete with the usual excitement about space exploration (never mind the cost and bellicose implications), there was not one single mention of the radioactive waste these reactors would produce.

The problem, like the waste itself, will simply be kicked into some invisible crater on the dark side of the Moon.

NASA, the U.S. Department of Energy, and assorted nuclear labs are pushing the small modular reactor (SMR) for nuclear projects on the Moon and Mars. Desperate to stay relevant and to continue gobbling up taxpayer dollars; this is music to the failing nuclear industry's ears. Financially disastrous and technically unresolved on Earth, the SMR, say these "experts," is ideally suited to the needs of humans living for extensive periods in space.

Since each of these mini-reactors will likely have an uninterrupted output of 10 kilowatts, it will take multiple reactors



on the Moon or Mars to fulfill the necessary functions for human inhabitants.

Needless to say, so far, there is no certified design, no test reactor, no actual reactor, and no fool-proof way to send such a reactor to the Moon. (Rockets have an unfortunate habit of sometimes blowing up on—or shortly after—launch.) Nevertheless, the year 2026 is the ambitious target date for all systems go. In keeping with the theme, "pie in the sky" springs to mind.

While no reactor design has been identified, it will most likely need to use highly enriched uranium (HEU), which puts the reactor firmly in violation of non-proliferation standards. As Dr. Edwin Lyman of the Union of Concerned Scientists told PBS Newshour, "This may drive or start an international space race to build and deploy new types of reactors requiring highly enriched uranium."

Given the utility of HEU for nuclear weapons use and the probes currently being sent to the Moon and Mars by "unfriendly" countries such as China and the United Arab Emirates, it does not take much of an imagination to envisage the temptation for theft by force. Will the U.S. deploy guards around its lunar reactors? Will we see terrorism on the Moon, even war?

What is this really all about? Profit? Prestige? Proliferation? The Idaho National Laboratory, which is eager to develop the lunar SMR prototype, sees this as an opportunity to emphasize "the United States' global leadership in nuclear innovation," the lab's John Wagner told Newshour.

This echoes the mantra parroted by almost every federal institution and corporation seeking to justify some new and

exorbitant nuclear expense: we cannot let China and Russia take over; the U.S. must retain—or regain—pre-eminence in the nuclear sector and in space.

It's not being cute to call this lunacy. With the ever-expanding crises on Earth, caused by the ravaging effects of climate change and the current pandemic, spending exorbitant sums to stick reactors on the Moon or Mars is more than madness; it is morally irresponsible. It abandons most of us on Earth to our fate, while, just maybe, possibly, someday, a handful of people will head off to the Red Planet. Never to return.

Yet undeterred by immorality and expense, and apparently without the slightest concern for the radioactive dirt pile these reactors will produce, NASA and the Department of Energy are eagerly soliciting proposals.

And what will these lunar reactors do? They will enable "capability for a sustained lunar presence, particularly for surviving a lunar night," NASA's Anthony Calomino told Space News. "The surface of the moon provides us an opportunity to fabricate, test and flight qualify a space fission system," he said.

The Moon is seen as our Launchpad to Mars. Now, it seems, it will also become our latest nuclear dustbin. If there is a meltdown, or a cascade of accidents among the cluster of small identical reactors there, all of which could suffer the same failure at the same time, it will become our next nuclear wasteland.

I am happy to say "goodnight moon." But I don't want to say "goodbye."

—Linda Pentz Gunter is the editor and curator of *BeyondNuclearInternational.org* and the international specialist at *Beyond Nuclear*.

## Odds & Ends

(cont from p. 11)

first became known to the Island Council when the Jeju Island government 'submitted a draft of the management plan on the public ownership assets for the fiscal year of 2021' which included the government's plan to sell 'the Island-owned lands'. According to the draft, it was 2018 when the relevant departments of Korean central governments made the decision to build the center. The mountain area of Deokcheon-ri, Gujwa-eup, Jeju was considered for the center. The size of area is 152 times bigger than a soccer field. The project would install the center building and three antennas by 2022 with the plan of 'further expansion later'. A Jeju government officer said that the Island government made only "a rough briefing to village mayors, development committee, and the local councilman." He even said that the issue "should have not been made public." The building of the center was also decided by the '16th ROK National Space Committee' in April 2019. The Committee includes the Vice-Minister of National Defense and deputy head of National Intelligence Service. It looks like the center is linked to the development of the reconnaissance satellite which the current government aims for by 2023. The center and military reconnaissance satellite must surely connect with current efforts to increase 'missile defense' deployments in South Korea.



### GN YouTube channel

Each month for the past year, GN board member Will Griffin (Iraq & Afghanistan war veteran) has been making a video depicting a different aspect of the new U.S. effort to 'control and dominate' space. He's putting them on our new YouTube channel, which can be found on YouTube at 'GNspace4peace'. If you click on the 'Subscribe' button, you'll get a notice each time a new video is posted on our channel. You can help by sharing the links to these videos so that more people can watch and learn. Thanks.

# ASIA-PACIFIC ‘MISSILE DEFENSE’: Focused on Korea & China

by Choi, Sung-hee

For the United States, the U.S. Indo-Pacific Command is the Command in charge of this region. Around 50% of the world population lives here. It is the critical area for the U.S. imperial strategy to dominate the world through intensifying military tension. The U.S. claims that North Korea and Iran are why the Pentagon needs ‘missile defense’ (MD). However, the ultimate aim of the U.S. is to contain China and Russia. This would be done by U.S.-led alliance/partnerships. In our area, the U.S. plans for a quad alliance (United States, Australia, India, and Japan) and quad-plus by a partnership with countries that could work as the Asian version of NATO.

The role of the U.S. and Japan in forming alliances in the area should not be ignored. It is important to understand how the U.S.-South Korea-Japan alliance is centered with MD systems. First, there are U.S. bases in the region. U.S. Forces Korea army, navy, and air force headquarters are located in Pyeongtaek, Kunsan, and Busan, South Korea. The U.S. bases in those spots form an MD belt along with [the new] Jeju navy base.

And in Japan, beside two main radar bases in Shariki and Kyogamisaki, Yokota, Zama, Yokohama, Sasebo, on the mainland of Japan and Kadena and Futenma, and White Beach in Okinawa are where main U.S. bases of Japan are located. The seven U.S. Forces Japan bases are rear bases of the UN Command\* (a U.S.-led fake UN organization which

steals the name and flag of UN. Its Commander is the same officer who commands all U.S. Forces in Korea) headquartered in Pyeongtaek in South Korea. (\* The content on the UN Command is much owed to Lee Si-woo)

However, it is meaningless to distinguish between U.S. bases and non-U.S. bases. Look at the location of the Jeju navy base, a South Korea base built-in 2016, a strategic spot for the U.S. against China. [U.S. Navy warships regularly port in Jeju.] The planned controversial Jeju second airport would be an air force base. Look at the Islands of Amami, Miyako, Ishigaki, and Yonaguni in the Okinawa archipelago where Japanese Self-Defense Force radar/missile bases are being built against China. The Islands and their seas in the region suffer from an arms race. Guam, Hawaii, Marshall Islands suffer, forced either to be U.S. MD regional headquarters, outposts or test sites.

## Removal of THAAD

Mr. Koh Young-Dae, Solidarity for Peace and Reunification of Korea, emphasizes that MD is the center of U.S.-led alliance, thus the center of U.S. global domination. He also emphasizes that withdrawal of the U.S. Terminal High Altitude Area Defense (THAAD) ground-based MD system forcefully built-in Soseong-ri, Seongju, South Korea in 2017 is the key for bringing peace to Northeast Asia. Why? It is because of its AN-TPY 2 radar close to China and Russia, not to mention North Korea. The THAAD system is “useless” in the small Korean peninsula. However, its radar can see

most military bases in the heart of China and delivers information to the Indo-Pacific Command in Hawaii and Strategic Command [at Offutt AFB] in Nebraska. It is clear that THAAD in Soseong-ri, Seongju is more than a mere weapon. It is leverage to dismantle the balance of power in the region. The matter is more serious as the Indo-Pacific Command is reorganizing MD system under the term called Joint Operational Emergent Need (JEON) for which THAAD radar in Soseong-ri is under product upgrade for the integration with other lower and higher tiers of MD systems in the region. It also means South Korea’s military subordination to the U.S. and Japan will be even more serious. Above all, it means the THAAD in Soseong-ri is the center of Northeast Asia MD, the center of U.S.-Japan-South Korea military alliance, thus a tentative center of nuclear war between powerful countries.

## South Korean and Japanese Space Force

Let me also talk about South Korea’s vision for space force. It was in 2008 when the South Korean air force first selected military personnel as their first stage to realize the leap for space force. Its ‘satellite monitoring and control squadron’ became operational in October. The air force plans to have the capabilities of monitoring & reconnaissance against the so-called ‘full spectrum threat’ by 2030. In early 2020 the army and navy also respectively organized either the ‘missile space policy team,’ or ‘combat system/space policy development’ department. The Ministry of National Defense installed a ‘missile space department,’ in 2018, while the first Global Hawk [drone] was introduced in 2019. South Korea’s first military satellite was launched mid-2020.

And how about Japan? Japan established its own space force squadron, in May, 2020, reasoning that it is for protecting the country’s satellites.

## The Faces of Resistance

Despite all these grim pictures, it is always important to remember that there are many people on the planet who are resisting such an arms race and militarization of our lands, seas, and skies. This year, people in Japan succeeded in rejecting their government plan to build Aegis Ashore MD system. How we can stop the MD? How we can stop the militarization of space? One of the things you can do is to sign the petition ‘End the Korean War’ (endthekoreanwar.net). The military and arms companies are fed by military tension, conflict, and war. They will find any excuse to have MD systems in this era of climate crisis and pandemic. Peace in Space is for Peace on Earth. Let’s keep space for peace.

—Choi, Sung-Hee presented this during a GN Keep Space for Peace Week webinar on Oct. 8, 2020. She serves on the GN’s advisory board and lives on Jeju Island, South Korea



# Multi-Domain Integration: The new Full-Spectrum Dominance

by Will Griffin

Full-Spectrum Dominance is defined by the Pentagon as the “the cumulative effect of dominance in the air, land, maritime, and space domains; electromagnetic spectrum; and information environment (which includes cyberspace) that permits the conduct of joint operations without effective opposition or prohibitive interference.”

Veteran activists in the peace/anti-war/anti-imperialist movements recall the wide use of this term over the past few decades. Today, the Pentagon has adopted a new term which goes even further and highlights the complexity of the technological advances within the military-industrial-congressional complex: Multi-Domain Integration (MDI).

“I think global integrated operations is really the next big ‘advantage space’ for the Department of Defense,” says Maj. Gen. John Nichols, the current Deputy Director of the Global Operations Center (GOC), which is operated by the Strategic Command (STRATCOM)—the most transnational combatant command of the Pentagon. It operates out of Offutt Air Force Base in Nebraska, home of STRATCOM. On the STRATCOM website it says, “The GOC is the nerve center for USSTRATCOM.”

*“The way we integrate is the way we fight... and the nations that figure out how to integrate global operations across all domains will have a significant advantage on the battlefield,” said the current STRATCOM Commander, Admiral Charles A. Richard.*

So, what exactly is MDI? Multi-Domain Integration, or sometimes referred to as Multi-Domain Operations, is the Pentagon strategy to connect and dominate the five operational domains in a synchronous, fluid and smooth operational control: maritime, land, air, space, and cyber. It’s Full-Spectrum Dominance with a new flair.

Officially, there is no definition for MDI or MDO. The US Army, the US Air Force and Joint Operations under NATO have published differing descriptions. The Joint Air Power Competence Centre describes this issue clearly:

*“The use of the term Multi-Domain Operations (MDO) has increased in popular-*



*ity over the past decade as military services, those of the US, in particular, have sought to codify their approach to warfare beyond the traditional confines of land, sea, and air. The term is new enough that, while many in military circles within the US and NATO have heard and even used the term themselves, the term is yet undefined by most nations and by NATO... In the short-term, it is imperative that the 29 members of NATO arrive at a clear definition so they can move forward together.”*

This institution simply wants to dominate the entire world. At the very least, MDI requires the global integration of all combatant commands of the Pentagon. Combatant commands are a way for the Pentagon to carve the world up into a pie for themselves, assigning specific structures to particular spheres of the globe.

The War Department (DoD) maintains 11 combatant commands. Each command has a “geographic or functional mission that provides command and control of military forces”, claims the DoD. With MDI, the goal would be to integrate all of these commands, and over the five operational domains; to dominate everything, everywhere and all the time. The command that is leading the charge is STRATCOM.

STRATCOM experienced a serious change after the 9/11 attacks. Prior to 2001, the command only maintained nuclear weapons and prepared for nuclear warfare—as if this wasn’t bad enough. As the years passed by, STRATCOM was assigned new ‘missions’, more than the direction of nuclear holocaust. It adopted new roles such as missile defense, global command and control, intelligence, surveillance and reconnaissance, global strike, cyberwarfare, electromag-

netic warfare and “combating” weapons of mass destruction. For over a decade now, the home of STRATCOM—Offutt Air Force Base—has been considered the most dangerous place on earth.

“In 2002 this command did not experience a sea-state change but a tsunami in the way it was organized and the missions that they were given to perform,” said a former STRATCOM Commander, Kevin Chilton. Another former STRATCOM Commander James Cartwright said: “When we got to 2002 we brought space. In 2003 we had a fire sale and picked up missile defense, ISR and global strike. In 2005 we picked up combating weapons of mass destruction. I’m hoping in 2008 we’ll get the world hunger piece.”

Outside of Nuclear Deterrence, ‘Strategic Deterrence’ has been the doctrine of the US military for decades. In a nutshell, it’s the strategy to develop so much superiority that your adversary will think twice about attacking you as they know it will be reciprocated with an equal or greater attack. In the same way the strategy of Mutual Assured Destruction guided the nuclear arms race during the Cold War, the same policy applies to all other domains: cyber, outer space, electromagnetic warfare, etc. STRATCOM wants to be the central force in the global integration of all combatant commands over all operational domains to hold all of the power, militarily and operationally, under the banner of Strategic Deterrence.

It should be noted that in 2019, STRATCOM dedicated one of their buildings, the Command and Control Facility, to the infamous war criminal Curtis E. Lemay, a US Air Force gen-

eral who implemented a scorched-earth bombing campaign in the Pacific theater during World War 2. Just to highlight some of Lemay’s thinking, here are some of his quotes from various writings and interviews:

- “If we’d lost the war, we’d all have been prosecuted as war criminals.”
- “There are no innocent civilians, so it doesn’t bother me so much to be killing innocent bystanders.”
- “We should bomb Vietnam back to the stone age.”
- “Every soldier thinks something of the moral aspects of what he is doing. But all war is immoral and if you let that bother you, you’re not a good soldier.”

So the fact that STRATCOM dedicated and renamed one of their buildings after this psycho war criminal is a sign of how they think about the world.

—Will Griffin is a veteran of the Iraq and Afghanistan wars, director of *The Peace Report*, and board member of the *Global Network*. He produces a short monthly space issues video for the GN. See the videos on YouTube at [GNspace4peace](https://www.gnspace4peace.org). Will lives in Philadelphia, PA.

## Check Spam Filter

We have found that many of the emails sent to our members and friends are ending up in their spam filters. Please be sure to regularly check your spam filters for our emails and others who are trying to share important news. You can keep up with the work of the GN at our website [www.space-4peace.org](https://www.space-4peace.org), and Bruce Gagnon’s blog called *Organizing Notes*

# Launch impacts: Ozone depletion & crowded orbits

As the number of space launches increase, rocket engine emissions grow in proportion. Rocket engine exhaust contains gases and particles that can affect Earth's climate and ozone layer. These emissions historically have been assumed to be not much of a threat to the global environment because the space industry was considered small. Dilution was the solution to space travel pollution. Now the dog is coming home to bite the master.

International regulations are needed to guide the program of commercial and military rocket launches in the future.

Every current rocket engine causes some ozone loss, and toxic rocket exhausts are the only human sources of ozone-destroying compounds injected directly into the middle and upper stratosphere where the ozone layer resides.

Future ozone losses from unregulated rocket launches will eventually exceed ozone losses due to chlorofluorocarbons, or CFCs, which stimulated the 1987 Montreal Protocol banning ozone-depleting chemicals.

"As the rocket launch market grows, so will ozone-destroying rocket emissions," said Professor Darin Toohey of Colorado University-Boulder's atmospheric and oceanic sciences department. "If left unregulated, rocket launches by the year 2050 could result

in more ozone destruction than was ever realized by CFCs."

## Crowded orbits

In 1978, NASA scientist Donald Kessler warned of a potential catastrophic, cascading chain reaction in outer space. Known as "Kessler Syndrome," the theory posited that orbits above Earth could one day become so crowded, so polluted with both active satellites and the junk from of past space missions, that it could render future space travel problematic and even impossible.

Rocket Lab CEO Peter Beck reports the company is already beginning to experience the effect of growing congestion in outer space. The sheer number of objects in space right now (a number that is quickly growing due to SpaceX's satellite internet constellation, Starlink) is making it more difficult to find a clear path for rockets to launch new satellites.

Multiple aerospace companies, including SpaceX and OneWeb, have vowed to launch tens of thousands of satellites into low Earth orbit, but these mega-constellations could make space a more congested and dangerous place.

The plunge into Earth's atmosphere of worn-out satellites, rocket parts and other space junk is a common occurrence. For spacecraft re-entries, that process means basically 'burning computers'.



During re-entry, big chunks of aluminum and other materials are subjected to intense heating. Some particles are very reactive, so even small amounts of them could have a significant effect on atmospheric chemistry.

'Vaporize' may mean 'disappear' in most people's minds, but that's assuredly not the case with re-entering space junk. Such debris generates 'reentry smoke particles' (RSPs) of unknown

composition and reactivity. Scientific models suggest that at least 50 percent of a given debris object will end up as RSPs during re-entry.

We must take capitalism and militarism out of the space biz. Space is part of our environment.

—Much of the info above was obtained from multiple space-related Internet sites

## China Completes its Satellite Network

by Gunnar Ulson

Earlier this year, China launched the final satellite in its Beidou satellite navigation network.

The completion of China's Beidou network makes it the fourth network of its kind and capabilities alongside the U.S. Global Positioning System (GPS), Russia's GLONASS, and the European Union's Galileo network.

Conceived in the 1990s with the first and second versions providing coverage for China and Asia-Pacific, respectively, the completed network now has global coverage with a total of 35 operational satellites, more satellites than any other network currently operates.

The fact alone that China possesses the technology to not only develop navigation satellites but also to launch and operate them to provide global coverage is a key metric of China's rise as a global power.

The *New York Times* had noted in its article, "China's 'Belt and Road' Plan in Pakistan Takes a Military Turn," that China had extended the use of its Beidou satellite navigation system to Pakistan not only for commercial use but also for military use. The article speculated that China planned to extend this offer to other potential partners across Eurasia as part of its Belt and Road Initiative (BRI).

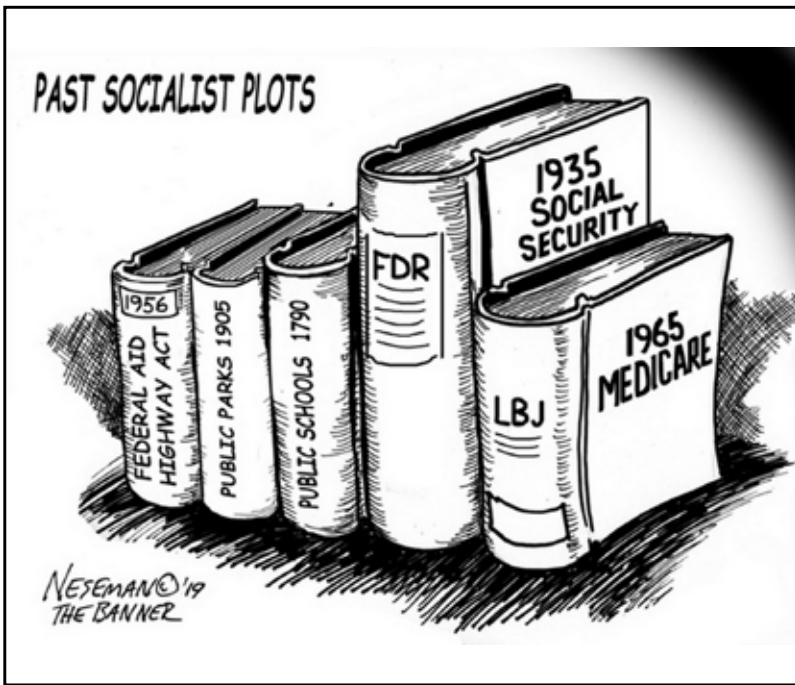
Of course, the BRI will include a

huge transportation component necessitating satellite navigation to track and guide vehicles, trains, boats, and aircraft. With China possessing its own satellite navigation network with full global coverage, China will neither depend on other nations like the U.S. or the EU for access to their GPS and Galileo networks nor be vulnerable to efforts by the U.S. and EU to deny China access to such network in order to hamper its growing influence regionally and globally.

—Ulson Gunnar is a New York-based geopolitical analyst and writer for the online magazine *New Eastern Outlook*



the funnies



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